

WHAT IS CLAIMED IS:

1. A method for detecting or quantifying a target nucleic acid on microarray having a plurality of sample detection sites, comprising:
 - (a) hybridizing the target nucleic acid to a microarray-bound biomolecule probe, forming an immobilized RNA:DNA hybrid complex;
 - (b) hybridizing a detectably-labeled biomolecule probe to a non-hybridized portion of the microarray-bound biomolecule probe, forming an immobilized RNA:DNA hybrid complex;
 - (c) detecting the target nucleic acid by measuring the immobilized RNA:DNA hybrid complex by binding the complex to a detectable antibody specifically reactive with the RNA:DNA hybrid and the detectably-labeled biomolecule probe; and
 - (d) repeating steps (a) - (c) on each of the plurality of sample detection sites.
2. The method according to claim 1, wherein the repeating steps are carried out sequentially.
3. The method according to claim 1, wherein the repeating steps are carried out simultaneously.
4. A method for detecting or quantifying a target nucleic acid on a microarray having a plurality of sample detection sites, comprising:
 - (a) hybridizing a portion of the target nucleic acid to a microarray-bound biomolecule probe, forming an immobilized RNA:DNA hybrid;
 - (b) hybridizing a non-hybridized portion of the target nucleic acid to a detectably-labeled complementary nucleic acid probe, forming an immobilized RNA:DNA hybrid complex; and
 - (c) detecting the target nucleic acid by measuring the RNA:DNA hybrid complex by binding the complex to a detectable antibody specifically reactive with the RNA:DNA hybrid and the detectably-labeled biomolecule probe; and

(d) repeating steps (a) - (c) on each of the plurality of sample detection sites.

5. The method according to claim 4, wherein the repeating steps are carried out sequentially.

6. The method according to claim 4, wherein the repeating steps are carried out simultaneously.

7. A method for detecting or quantifying a target nucleic acid on a microarray having a plurality of sample detection sites, comprising:

(a) hybridizing the target nucleic acid to a complementary nucleic acid probe, forming an RNA:DNA hybrid;

(b) hybridizing a non-hybridized portion of the target nucleic acid to a microarray-bound biomolecule probe, forming an immobilized RNA:DNA hybrid complex, and

(c) detecting the target nucleic acid by measuring the RNA:DNA hybrid complex by binding the complex to a detectable antibody specifically reactive with the RNA:DNA hybrid; and

(d) repeating steps (a) - (c) on each of the plurality of sample detection sites.

8. The method according to claim 7, wherein the repeating steps are carried out sequentially.

9. The method according to claim 7, wherein the repeating steps are carried out simultaneously.

10. A method for detecting or quantifying a target nucleic acid on a microarray having a plurality of sample detection sites, comprising:

(a) hybridizing the target nucleic acid to a reagent-modified nucleic acid to form a reagent-modified RNA:DNA hybrid;

(b) binding the reagent-modified RNA:DNA hybrid to an immobilized reagent-binding molecule;

(c) detecting the target nucleic acid by measuring the immobilized RNA:DNA hybrid using a detectable antibody specifically reactive with the RNA:DNA hybrid; and

(d) repeating steps (a) - (c) on each of the plurality of sample detection sites.

11. The method according to claim 10, wherein the repeating steps are carried out sequentially.

12. The method according to claim 10, wherein the repeating steps are carried out simultaneously.

13. A method for detecting or quantifying a target nucleic acid on a microarray having a plurality of sample detection sites, comprising:

(a) hybridizing a target nucleic acid to a microarray-bound biomolecule probe, forming an RNA:DNA hybrid;

(b) hybridizing a non-hybridized microarray-bound biomolecule to a complementary region of a detectably-labeled biomolecule probe, wherein said non-hybridized microarray-bound biomolecule probe is different from the microarray-bound biomolecule probe of step (a); and

(c) detecting the target nucleic acid by measuring the RNA:DNA hybrid by binding the RNA:DNA hybrid to a detectable antibody specifically reactive with the RNA:DNA hybrid and the detectably-labeled biomolecule probe; and

(d) repeating steps (a) - (c) on each of the plurality of sample detection sites.

14. The method according to claim 13, wherein the repeating steps are carried out sequentially.

15. The method according to claim 13, wherein the repeating steps are carried out simultaneously.

16. A kit for the detection of an RNA:DNA hybrid comprising all or part thereof:
- a) a microarray solid support having a plurality of sample detection spots, wherein said sample detection spots are immobilized nucleic acids, said immobilized nucleic acid being complementary to a target nucleic acid or part thereof, or said immobilized nucleic acid being complementary to part of an RNA:DNA hybrid, or said immobilized nucleic acid being complementary to a nucleic acid probe;
 - b) a hybridization buffer;
 - c) a wash buffer; and
 - d) a solution comprising an RNase and a detection antibody specifically reactive with an RNA:DNA hybrid.
17. The kit according to claim 16, wherein the detection antibody is a labeled RNA:DNA hybrid-specific antibody.
18. The kit according to claim 16, wherein the detection antibody is an RNA:DNA hybrid-specific antibody and a labeled RNA:DNA hybrid antibody-specific antibody
19. The kit according to claim 17, wherein the RNA:DNA hybrid-specific antibody is monoclonal.
20. The kit according to claim 18, wherein the labeled RNA:DNA hybrid antibody-specific antibody is monoclonal.
21. The kit according to claim 17, wherein the RNA:DNA hybrid-specific antibody is polyclonal.
22. The kit according to claim 18, wherein the labeled RNA:DNA hybrid antibody-specific antibody is polyclonal.